REMARKS/ARGUMENTS:

ABSTRACT:

Use of the legal phraseology term "means" in the Abstract was objected to by the Examiner; Therefore in line 5 of the abstract, the phrase [[passive means such as]] is replaced with a passive arrangement of components that may include .

SPECIFICATION:

On page 8 line 25 the word [[third]] is replaced with fourth.

This is a correction of a typographical error only.

CLAIMS:

Status Identifiers in Claims 6 and 7 have been changed to comply with 37 CFR 1.121

The PTO states that Are in U.S. Pat. 4,213,057 teaches rotors 12, 14 attached at spaced intervals to driveshaft 74.

Applicant replies: This is false - Are instead teaches counter-rotating propellers, driving two separate driveshafts 64 and 74, which in turn drive two counter-rotating halves 60, 72 of a generator. Front prop 12 turns front shaft 64, which turns internal rotor 60 of the generator. Rear prop 13 turns rear shaft 74 which turns external rotor 72 of the generator. Are's advantage, previously known in the art, is a doubling of the relative generator RPM. Housing 20 should not be confused with, or substituted for, a continuous driveshaft. It is not a continuous driveshaft but only a means of support for the bearings. Also, Are teaches only a single spaced interval, rather than the cited plurality of spaced intervals. Are suggests no offset angle alpha to bring fresh wind to each rotor.

The PTO states that Shin in U.S. Pat. 5,222,924 teaches a co-axial, multi-rotor wind turbine having rotors 300 attached at spaced intervals to a driveshaft 310...

Applicant replies: This is false – Shin instead teaches counter-rotating propellers, driving two separate driveshafts, as a cursory glance at Fig. 5 will verify. Also, Shin teaches only a single spaced interval, rather than the cited plurality of spaced intervals. Shin suggests no offset angle alpha to bring fresh wind to each rotor.

The PTO states that Kronmiller teaches a coaxial multi-rotor wind turbine having rotors 45, 50 attached at spaced intervals to a driveshaft 33.

Applicant replies: This is false – Kronmiller instead teaches a powered induction fan 40 mounted on an outlet shaft 37, driven by a speed reducing means 35, blowing air into housing 10, and a smaller turbine rotor 45 mounted on shaft 44, located at the outlet of housing 10, driving conversion means 30. The theory of operation is that power required to drive the induction fan 40 is more than recouped by the smaller turbine rotor 45, basically a perpetual motion machine integrated into a wind turbine. Also, Kronmiller teaches only a single spaced interval, rather than the cited plurality of spaced intervals. Note that Kronmiller's apparatus must be mounted entirely above the tower top to make room for the housing 10, making tower strikes a non-issue since the blades remain above the tower, enclosed in housing 10.

(Applicant Prior Art Disclosure: U. S. Patent 3,942,026 to Carter, March 1976 shows several horizontal axis type rotors (called windwheels), mounted in two closely-spaced clusters, on a single driveshaft. Carter's many windwheels, however, are not all equally spaced. The extremely close spacing of the windwheels in each cluster of windwheels would prevent significant fresh wind from reaching each separate "windwheel", or rotor. See attached Information Disclosure Statement.)

Applicant Remarks:

Tower strikes by horizontal axis type wind turbine blades is a known and persistent problem in the art. The extra blade stiffness required to avoid tower strikes adds mass and expense.

The substantially equal spacing between rotors of the Applicant's present invention, combined with offset angle alpha, serves mainly to allow fresh wind to each rotor, however an additional advantage is that this spacing can be instrumental in preventing tower strikes. This not only solves the known and persistent problem of tower strikes, but also allows the turbine to be mounted on a wider elevating means than conventional turbines, such as a tripod, building, or tower with high guy wires, in addition to the advantages of higher RPM and lighter rotor mass.

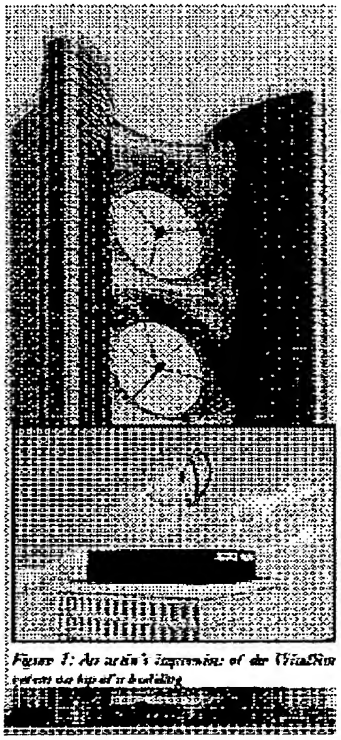
Since Applicant has pointed out that none of the prior art cited by the PTO has multiple rotors mounted on a single driveshaft, applicant has found it necessary to find prior art that does have more than one rotor mounted on a single driveshaft, in the form of Carter U.S. 3,942,026.

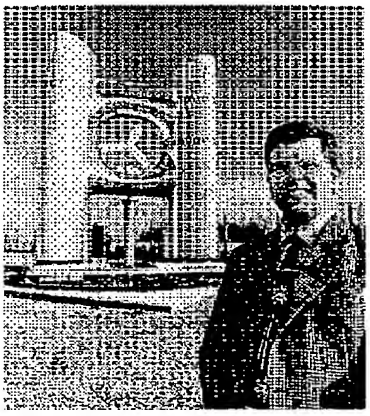
In order to then distinguish over a hypothetical Carter/Black combination, applicant has added the words "said spaced intervals being large enough to allow a supply of fresh wind, substantially undisturbed by upwind rotors, to reach each rotor" in describing the spaced intervals of claim 6. Claim 20 (new) additionally requires that said spaced intervals be substantially equal, another, further way to distinguish over a Carter/Black combination.
Also in claim 6 Applicant has responded to the PTO objection to the term "normal tower" by eliminating the phrase "that is wider than a normal tower" from claim 6. This is appropriate since tower strikes are a persistent problem with conventional turbines on conventional towers.
Claim 15 (new) is a method claim, used to enumerate the problems simultaneously solved by this method of mounting several rotors on a building that provides support for each rotor, freedom to rotate, freedom to collectively aim, manifold coupling to a single load, and fresh wind to each rotor, while allowing blades to travel below the roofline without striking the building.
This claim 15 was added to distinguish over the PTO cited combination of Are and Black, insofar as it is valid, or more properly, an analogous combination of Carter and Black.
Regarding rejection of claim 10:
Applicant has shown at the beginning of the "Remarks" section that Are teaches separate driveshafts turning in opposite directions, rendering the PTO proposed combination of Are and Black invalid. Applicant however offers prior art of Carter 3,942,026 to substitute for Are in the proposed PTO combination. Applicant contends that such a combination is not in fact obvious. As evidence of this fact, applicant cites the long sought and persistent desire and need for a method to mount horizontal axis turbines on a building, combined with the very existence of ideas such as Black and other vertical axis machines being the predominant known examples proposed for building-mounted turbines. Most known designs for building-mounted turbines, such as those of McKenzie Bay, etc. utilize vertical axis turbines, despite their known lower efficiency, for the very reason that there has, until this time, been no known satisfactory method to mount powerful horizontal axis turbines on a building, without the requirement for an additional tower above the building to provide blade clearance. The problem has been that the blade overhang of a large diameter rotor limits directional freedom to aim into the wind. So vertical axis turbines are normally proposed for building tops. Black is a perfect example of the assumption that the entire turbine must be located above the building, and that only a vertical-axis turbine is appropriate. The result is an uneconomical installation using a turbine type known

to have the very lowest performance. Applicant solves the problem of how to utilize modern, high performance, high tip speed, horizontal axis rotors, in an architectural context, using a simple configuration. This is a true and workable solution, based on existing prototypes, rather than a paper design that will never be built. Therefore a long and persistent need has been solved, using the new type of high performance, multi-rotor turbine style recently patented by Applicant. It is not obvious to one skilled in the art to use or combine any of the PTO cited references that have separate driveshafts for each rotor, or that suffer from dismal performance. Below are illustrations of several proposed building-mounted wind turbine designs, including ones proposed for the new World Trade Center - Freedom Tower in New York City. These designs represent the best efforts of the best minds in architecture and wind turbine technology. Since none suggest multiple rotors on a single driveshaft, or a driveshaft that overhangs the building, and such a concept has never been proposed before, Applicant states that such a configuration is not obvious. No new matter has been added.

Thank you very much. Sincerely, Douglas Spriggs Selsam August 3, 2005

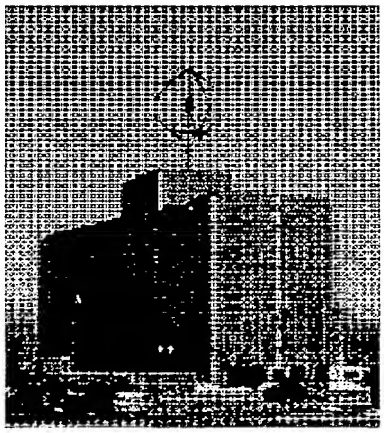
Pictures below are included to help illustrate Applicant's points stated above.



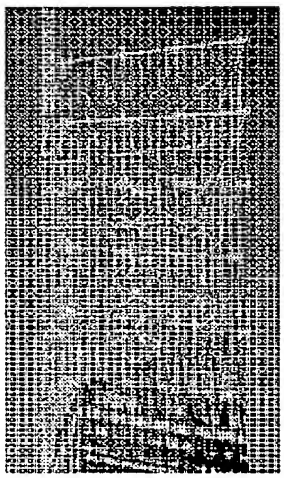


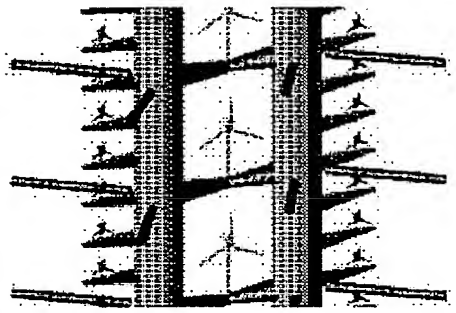
Left: HausRotor building-mounted wind turbine design from Germany.

Below: McKenzie Bay International building-mounted vertical axis wind turbine concept.

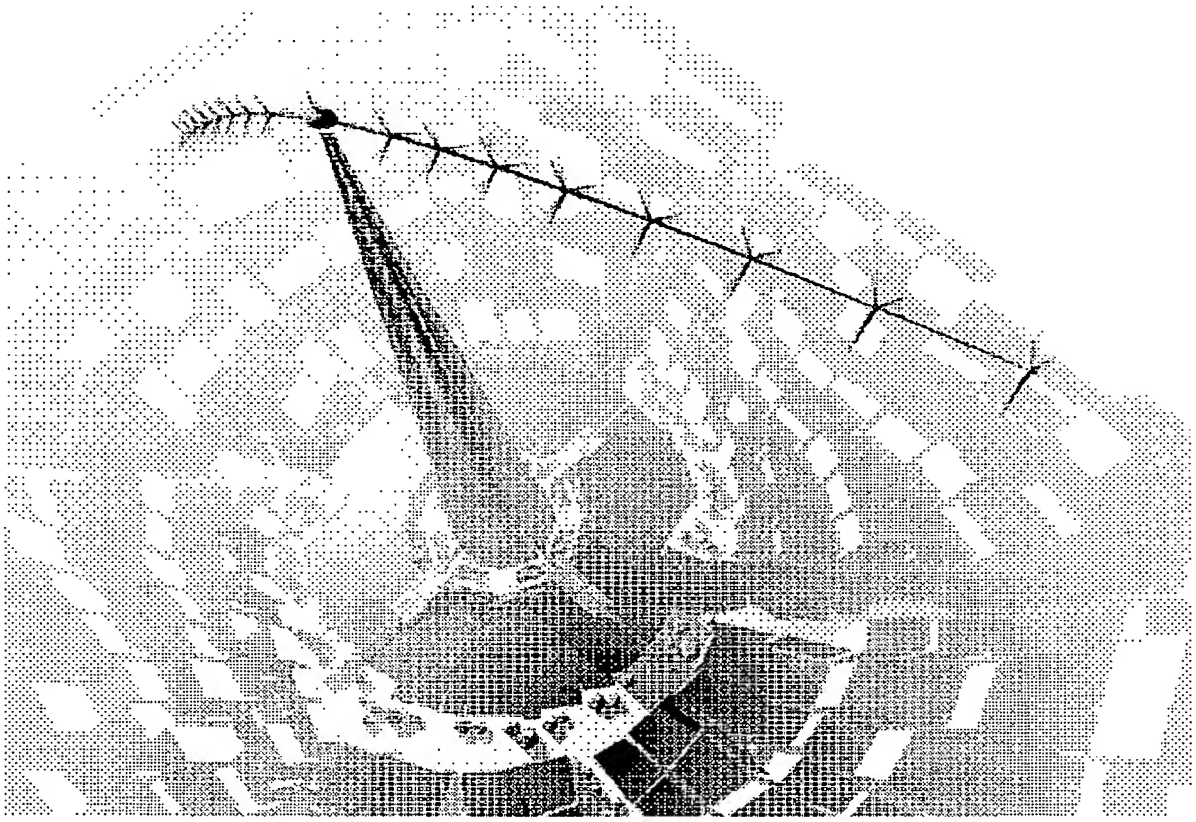


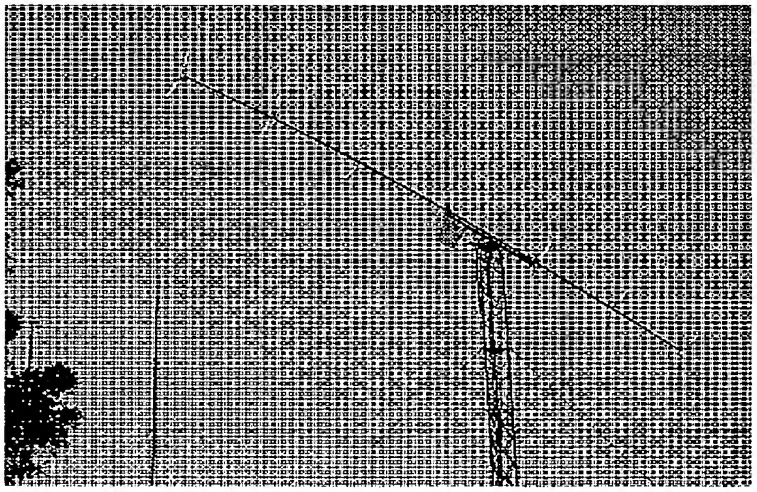
Below: Proposed rooftop horizontal-axis wind turbine installation concept for the new World Trade Center - Freedom Tower. This wind energy project was cancelled due to lack of a workable configuration. The new WTC Freedom Tower will be built without wind turbines because there was no known way to actually make it work.





Below: Applicant's building-mounted turbine design on a 2000 foot tall conical edifice – a self-powered, self-contained city. (rendering by Michael Sanchez)





Left: Applicant's actual prototype, funded by the California Energy Commission

Douglas Spriggs Selsam
August 3, 2005